

NOTES ON SOUTH AUSTRALIAN MARINE MOLLUSCA, WITH
DESCRIPTIONS OF NEW SPECIES.—PART III.

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PLATE IV.

Cingulina spina, Crosse and Fischer.

Turritella spina, Crosse and Fischer, Journ. de Conch., 1864, p. 347; 1865, p. 44, t. 3, figs. 12-14, type locality, St. Vincent Gulf; *Aclis tristriata*, Ten. Woods, Proc. Roy. Soc. Tasm., 1877, p. 150; type locality, N.W. Coast, Tasmania; No. 220, Handlist of Aquatic Moll. of S. Aust., Adcock, 1893.

This species varies greatly. It may be very attenuate, or comparatively wide; uniformly subulate or posteriorly spindle-shaped; have valid or obsolete axial striæ; a smooth base, or with numerous sublenticular spiral grooves, or two slight spiral undulations. The last whorl may be very ventricose. A more or less valid lira may lie in the suture. The cinguli are usually nearly equal, but the central one may be more developed, and the suture be wide and deep and distinct.

Cingulina diaphana, *spec. nov.* Pl. iv., fig. 11.

Shell thin, diaphanous. Protoconch asymmetrical smooth. Whorls exclusive of this six, medially carinate, with seven valid spiral liræ, equally distant on the penultimate, scabrous from microscopic accremental striæ, obliquely receding from the suture. Suture well marked, slightly channelled. Body-whorl with a stouter lira at the periphery, and a deeper sulcus below it, and seven basal liræ less valid than those above, base sloping. Aperture fusiformly lozenge-shaped, slightly contracted behind, and narrowly effuse in front. Outer-lip simple. Columella slightly convex posteriorly uniformly concave throughout the anterior three-fourths; inner-lip complete.

Length, 2·1 mm.; breadth, ·7 mm.; aperture, ·6 mm.

Hab.—Henley Beach, one example in the late Prof. Tate's collection, labelled "*Mathilda pagodula*." One other specimen dredged in deep water St. Vincent Gulf.

Scala aculeata, Sowerby, jun.

Scalaria aculeata, Sowerby, Proc. Zool. Soc. Lond., 1844, p. 12; Thes. Conch., vol. i., p. 86, sp. 13, pl. xxxii., figs. 35, 36, 37, 1847; Tryon, Man. Conch., vol. ix., p. 63, pl. xiii., figs. 90, 91, 1887; No. 192, Handlist of Aquatic Moll. of S. Aust., 1893; S.

aculeata, Lamarek, 1819; in Tate and May's Tasmanian Census, Proc. Lin. Soc. of N.S.W., 1901, pt. 3, p. 379.

It ranges alive from the shore (Henley Beach, "with a purple mucus," A. Zietz), to 12 fathoms Porpoise Head, and 22 fathoms Backstairs Passage; and dead in perfect condition in 104 fathoms 35 miles S.W. of Neptune Islands.

Scala jukesiana, Forbes.

Scalaria jukesiana, Forbes, appendix to Voy. of "Rattlesnake," vol. ii., p. 383, t. 3, f. 7, 1852; Tryon, Man. Conch., vol. ix., p. 66, pl. xiv., f. 20, 1887; No. 194, Handlist of Aq. Moll., Adcock, 1893. *Scalaria delicatula*, Crosse and Fischer, Journ. de Conch., 1864, p. 347; 1865, p. 42, t. 3, f. 9, 10; type locality, St. Vincent Gulf, S. Aust.; Tryon, Man. Conch. ix., p. 69, pl. 14, f. 39, 1887; habitat, New Caledonia.

Tryon defines it as "very minutely spirally striated," but Crosse says "the intervals between the ribs are smooth." No fine spiral lines could be detected by me on the two shells in the British Museum, labelled "*S. delicatula*, Cr. and F., S. Aust., G. F. Angus," on the back of the tablet being "S. Aust. and New Zealand. Type."

Pritchard and Gatliff, in Cat. of Marine Shells of Victoria, Proc. Roy. Soc. of Vict., 1900, vol. xiii. (N.S.) pt. i., p. 143, give *S. consors*, Crosse and Fischer, Journ. de Conch., 1864, p. 347; 1865, p. 43, pl. iii., f. 11, 12, as a synonym; but the type shell in the Brit. Mus. shows a well-marked peripheral keel, which none of our S. Australian *S. jukesiana* possesses.

Scala friabilis, Sowerby, jun.

Scalaria friabilis, Sow., Proc. Zool. Soc., Lond., 1844, p. 27; Thes. Conch., vol. i., p. 95, sp. 47, pl. xxxiii., f. 47, 1847; Tryon, Man. Conch., vol. 9, p. 61, f. 75, 1887; No. 193, Handlist Aq. Moll., Adcock, 1893.

On the tablet in the Brit. Mus. is "Swan River, Australia, on the sands, unique, Dr. Collie, type." Our shells are identical with this; but one measures 22 mm., *i.e.*, 6 mm. longer than the type. Porpoise Head, 12 fathoms, 2 recent, 2 dead; Backstairs Passage, 20 fathoms, 1 recent.

Scala rubrolineata, Sowerby, jun.

Scalaria rubrolineata, Sow., Thes. Conch., vol. i., p. 91, sp. 33, pl. xxxiv., f. 83, 84, 1847; Tryon, Man. Conch., vol. ix., p. 60, pl. xii., f. 82-83, 1887.

This species, misidentified, was listed in Handlist of Aq. Moll. of S. Aust., Adcock, 1893, as No. 195, *S. imperialis*, Sby. It is very rare. The Levens Beach, Spencer Gulf (W. T. Bednall); St. Vincent Gulf (D. J. Adcock).

Scala zelebori, Dunker.

Scalaria zelebori, Dunker, Verhandl. Zool. Bot., Gesell., Wien, 1866, vol. xvi., p. 912. *Scalaria zelebori*, Frauenfeld, Reise, Fregatte Novara, vol. ii., pt. 3, p. 7, t. i., f. 6, 1868; Tryon, Man. Conch., vol. ix., p. 78, pl. 15, f. 75, 1887; Hand-list of Aq. Moll. of S. Aust., Adcock, 1893, No. 199.

This is recorded for S. Aust. by Tate, from a single individual given to him by Mr. Pulleine, from Encounter Bay. No other collector has taken it, nor has it been found in Tasmania or Victoria. Probably it does not occur here.

Scala platypleura, *spec. nov.* Pl. iv., fig. 6.

Shell moderately solid, whorls 8, increasing rapidly. Protoconch two whorls, smooth, convex. Whorls well rounded. Suture deep, simple. Varices running forward below, solid, rather low, doubly flanged so that a free edge projects slightly on either side, edges minutely cut, surface slightly irregular, subangular below the suture, 15 on the body-whorl. Aperture roundly quadrate, with an oblique gutter at the base of the columella.

Sculpture.—Obsolete subdistant spiral incisions mounting the varices.

Length, 5 mm.; spine, 2.6 mm.; width, 2.3 mm.

Hab.—Backstairs Passage 22 fathoms, 2 dead. Type in Dr. Verco's collection.

The second shell is rather thinner, and its varices are not quite so solid.

Diagnosis.—From *S. zelebori*, Frnfd., its nearest ally, it is distinguished by more numerous varices, and its incisions, which are quite different from the more distant spiral liræ of the N.Z. form. It differs from *S. jukesiana*, Forbes, in the more rapid increase of its whorls, its fewer and much more solid varices, which also run forward and downwards instead of backward.

Scala acanthopleura, *spec. nov.* Pl. iv., fig. 8.

Shell rather solid, whorls 8, rapidly increasing. Protoconch conical, smooth, sharp, 3 whorls, homostrophe. Varices solid, half the width of the interspaces, numerous, 20 on the body-whorl, tuberculate, 4 tubercles or prickles on the penultimate, 7 on the body-whorl, microscopically axially striate. Interstices very minutely closely spirally liræ, liræ mounting the varices. Aperture round, with a shallow gutter at the junction of the basal lip and the columella, which is thus slightly twisted and toothed. The varices wind round the columella as 7 oblique plaits ceasing at the inner lip, which here is thin and erect.

Length, 4.1 mm.; spire, 2.6 mm.; width, 2.6 mm.

Hab.—104 fathoms, 35 miles S.W. of Neptune Islands, 5 dead.

Type in Dr. Verco's collection.

***Scala crassilabrum*, Sowerby, jun.**

Scalaria crassilabrum, Sow., jun., *Thes. Conch.*, vol. i., p. 105, p. 87, pl. xxxv., figs. 115, 116, 1847; Tryon, *Man. Conch.*, vol. ix., p. 82, pl. 17, f. 32, 1887.

The localities given are the Philippines and Central America, and, though the regions are remote, our shell answers to the description and figures. Dredged in deep water, St. Vincent Gulf. One example, measuring 12.75 mm. by 3.5 mm.

***Scala granosa*, Quoy.**

Turritella granosa, Quoy, *Zool. Voy. Astrolabe*, vol. iii., p. 138, t. 55, f. 29, 30; *Scalaria granulosa*, Quoy, Tryon, *Man. Conch.*, vol. ix., p. 80, pl. xvi., f. 11, 1887; No. 198, *Handlist of Aq. Moll. of S. Aust.*, Adcock, 1893; *Scalaria ballinensis*, E. A. Smith, *Ann. Mag. Nat. Hist.* (6), vii., 1891, p. 139, only a smooth form, teste Hedley, *Proc. Lin. Soc. N.S.W.*, 1901, pt. iv., p. 701, pl. xxxi., f. 21.

Taken alive at Encounter Bay, in crevices of rocks (Dr. Perks). It must be a very littoral species, as no example has been dredged by me.

***Scala australis*, Lamareck.**

Scalaria australis, Lam. *Anim. s. Vert.*, 2nd edit., vol. vi., p. 228, sp. 6, 1843; Delessert *Recueil*, t. 33, f. 11; *Thes. Conch.*, p. 103, sp. 82, pl. xxxv., f. 135, 1847; Tryon *Man. Conch.*, vol. ix., p. 76, pl. xvi., f. 90, 1887; No. 197 *Handlist of Aq. Moll. of S. Aust.*, Adcock. *Hab.* "the Seas of New Holland."—M. Macleay.

Taken alive on the beach at Corny Point, Spencer Gulf (Dr. Perks), and Middleton (D. J. Adcock). It must be very limited in its range as regards depth, for I have not taken a single individual alive or dead by dredging.

***Scala consors*, Crosse and Fischer.**

Scalaria consors, Crosse and Fischer, *Journ. de Conch.*, vol. xii., 1864, p. 347; xiii., 1865, p. 43, pl. 3, figs. 11, 12; Tryon, *Man. Conch.*, vol. ix., p. 74, pl. 13, f. 11, 1887; No. 196, *Handlist of Aq. Moll. of S. Aust.*, Adcock, 1893. Type locality, St. Vincent Gulf, S. Aust.

In the Brit. Mus. the tablet has on its face, "*S. consors*, Cr. and Fischer, Ceylon, G. F. Angas," and on its back, "Type." It has a peripheral keel. Mr. J. C. Melville cites it from Bombay, and refers it to *perplexa*, Pease. I have a note without any reference. "Angas sent shells from S. Aust. to Crosse, for description, and among them were *S. delicatula*

and *S. consors*, their habitat being given as St. Vincent Gulf : and then sent the type of *S. consors* to the Brit. Mus. as from Ceylon." No shell answering to its description has been found in S. Aust.

***Scala valida*, spec. nov.** Pl. iv., fig. 7.

Shell elongate, imperforate, 9 whorls. Protoconch conspicuous, submammillate, $1\frac{3}{4}$ whorls, at first smooth, then with gradually developing axial costæ: it ends abruptly with a faintly averted edge, and is followed by spirally striated sculpture. Spire-whorls uniformly convex. Suture deep, subcanaliculate. Body-whorl convex, with a bold, square, subtuberculate peripheral rib: base somewhat concave. Aperture slightly oblique, roundly oval, faintly flattened anteriorly: border well defined, smooth, and flat; at the base its outer margin is not curved, but straight. Varices 12, slightly advanced at the upper suture.

Sculpture.—Axial ribs, 18 in the body-whorl, about as wide as the interspaces, prominent, round, tapering at each end, terminating at the peripheral rib, which widens to meet them, and so becomes undulatingly tuberculate. Spiral liræ 12 on the body-whorl above the periphery crossing the costæ and extending to the aperture: 7 spiral liræ on the base increasing in width towards the axis. The interstices between all liræ spiral and basal and the edges of the peripheral rib are punctate.

Ornament.—The shell is whitish. Three obscure spiral light-brown bands, one tinging the peripheral rib, one just below the centre of the whorls, and one midway between this and the upper suture. The last band is chiefly represented by a small brown blotch on the rib behind each variceal costa.

Length, 6.4 mm.; spire, 2.7 mm.; aperture, including the rim, 1.6 mm.; width, 2.3 mm.

Hab.—Backstairs Passage, deep water, 6 recent, none alive.

Type in Dr. Verco's collection.

Variations.—The spiral liræ may be only 9 or may be 17. One shell is 6.9 mm. in length, with 9 whorls.

***Scala morchi*, Angas.**

Scala (Cirsotrema morchi), n. sp., Proc. Zool. Soc., Lond., 1871, Jan. 3, p. 15, pl. i., f. 7; type locality, Port Jackson; op. cit., 1871, Jan. 17, p. 90, sp. 23; Tryon, Man. Conch., vol. ix., 1887, p. 82, pl. 16, f. 7.

Some twelve examples of this shell have been dredged by me in the deeper waters of St. Vincent and Spencer Gulf, and one at 104 fathoms, 35 miles south-west of the Neptune

Islands. In the British Museum is one shell labelled, "*S. morchi*, Angas; Port Jackson, G. F. Angas"; it is not affirmed to be a type; but it quite agrees with Angas's description. The axial and spiral ribs and ridges are of about equal prominence, and there is no peripheral rib. There are varices at irregular intervals which run downwards and backwards on the spire; these are not noted in the definition of the type. It recalls the *S. suturalis*, Hinds; but this has a valid peripheral rib, which appears as a lira in the suture, and its axial costæ are more marked, and it is a larger shell, being eight lines in length, with ten whorls, instead of five lines with nine whorls. Our *S. Aust.* examples vary very greatly. First the peripheral rib is quite valid, and the axial costæ end abruptly upon it, and the base has only spiral liræ. In one this just appears in the suture as a lira. In others this rib is less and less marked, and may be quite absent. The axial costæ also differ in validity, much surpassing the spiral ridges, or equalling them, or being less prominent; they may end at the peripheral rib, or extend beyond the periphery, and gradually fade out on the base. The spiral ridges may vary in number and in size and in the degree to which they modify the axial costæ. But all have the irregular varices and a minute punctate surface.

These considerations suggest the identity of *S. morchi*, Angas, with *S. suturalis*, Hinds. I do not know whether the latter has the punctate sculpture, and as it is a much larger shell, and comes from a remote region, this is left *sub judice*. Whether *S. valida*, Verco, and *S. invalida*, Verco, will also come within the specific definition of *S. morchi*, Angas, must be left until more material is gathered: at present intermediate forms are wanting. One example of *S. morchi* supplied an operculum, figured on pl. iv., figs. 1, 2, which is similar to that of *S. aculeata*, Low., and tends to confirm the generic position of this rather atypical Scala.

Scala invalida, *spec. nov.* Pl. iv., figs. 9, 10.

Shell rather thin, translucent, elongate, imperforate, 11 whorls. Protoconch deflected, 2 whorls, nearly smooth: the first round, the second angulate just above its centre, and ending in a varix. Spire whorls 8, regularly convex: suture deep, simple. Body-whorl round with the merest peripheral angulation. Aperture subrotund, flattened by the base of the body-whorl, margin thickened externally.

Sculpture.—Very crowded, fine axial and spiral liræ, punctating the whole surface. The axial liræ vary somewhat in thickness; they continue over the base and the callus of the aperture, so as to reach nearly to its inner margin, leav-

ing only a narrow rim smooth. Deep in the suture are tubercles on the upper border of each whorl, about 24 on the body-whorl. Varices at irregular intervals, one on the second whorl, one on the fifth, and one at the aperture. They curve forwards towards the upper suture.

Length, 10·4 mm.; breadth, 3 mm.; body-whorl, 3·5 mm.

Hab.—St. Vincent Gulf, deep water, one recent.

Obs.—This species may prove to be an extreme variant of *S. morchi*, Angas, in which the radial and spiral costæ have been suppressed or reduced to punctating lirellæ.

Scala (acrilla) minutula, Tate and May.

Scalaria (acrilla) minutula, Tate and May, Proc. Roy. Soc. of S. Aust., xxiv., 1900, p. 95; Proc. Linn. Soc. N.S.W., 1901, pt. 3, p. 379, pl. xxv., fig. 41; type locality, Tasmania; type in Hobart Museum.

Hab.—Fowler's Bay (R. Tate), St. Vincent Gulf.

Crossea, A. Adams.

Crossea labiata, Ten-Woods.

Crossea labiata, Ten-Woods, Proc. Roy. Soc., Tasm., 1875, p. 151; type locality, Long Bay, Tasm.; No. 200 in Handlist Aq. Moll. of S. Aust., Adcock, 1893; Hedley, Proc. Linn. Soc. N.S.W., 1900, p. 500, pl. xxvi., f. 18; Tate and May, Census of Marine Moll. of Tasm., Proc. Linn. Soc., N.S.W., 1901, pt. 3, p. 379.

Dredged dead St. Vincent Gulf 9 and 5 fathoms (Verco), Beach Holdfast Bay, Aldinga, West Coast (R. Tate).

Crossea concinna, Angas.

Pros. Zool. Soc., Lond., 1867, p. 911, t. 44, f. 14; Tryon, Man. Conch., ix., p. 85, pl. 17, f. 45, 1887; Tate and May in Census of Marine Moll. of Tasm., Proc. Linn. Soc., N.S.W., 1901, pt. 3, p. 380; Conchyl. Cab., Mart. and Chemn, Bd. 1, Abt. 28, p. 261, t. 41, f. 10, 1902.

Dredged dead St. Vincent Gulf and Backstairs Passage, 17 fathoms, 7 dead.

Crossea cancellata, Ten-Woods.

Proc. Roy. Soc., Tasm., 1878, p. 122. Type locality, Blackman's Bay, Tasm. *Delphinula johnstoni*, Beddome, Proc. Roy. Soc., Tasm., 1882, p. 31, and 1883, p. 169: *Crossea cancellata*, Ten-Woods, Tate and May, Census Marine Moll. Tasm., Proc. Linn. Soc., N.S.W. 1901, pt. 3, p. 381, pl. xxiii., fig. 1.

Dredged off Newland Head, 20 fathoms, 5 dead.

(?) Terebra dyscritos. Pl. iv., figs. 3, 4, 5.

Shell solid, long, narrow. Whorls 7. Protoconch 2 whorls, homostrophe, convex, with 20 fine spiral incisions ending abruptly in a varix, white. Spire whorls with angulation at one-fourth the distance from the lower suture; uni-

formly concave between the angulations; with axial costæ, valid, rounded nearly as wide as the interspaces, and spiral liræ, wider anteriorly, wider than their interspaces, crossing the costæ, six above the angulation, and two below it; fine accremental striæ under the lens. Suture distinct, linear, undulating, convex between the costæ. Body-whorl oblong with two median rounded carinæ, the upper larger, more prominent, forming the angulation (in the spire whorls), the lower producing the upper margin of the suture, tuberculated by the axial costæ, which cease at the lower one; six spiral liræ above them, two between them, and ten of varying size below them on the concave base. Aperture subtriangular, outer side straight, inner sigmoid. Outer lip thin, slightly excavated just below the suture for one-sixth of its extent to form a shallow sulcus, with a margin feebly thickened and everted, then excavated again to the upper carina, an acute short projection between the two excavations; edge crenulated by spiral liræ and carinæ. Basal lip begins at the lower carina and is concavo-convex to the anterior notch. Columella concavo-convex from behind forwards.

Dimensions.—Length, 9·1 mm.; width, 2·7 mm.; aperture, 2·8 mm.; body-whorl, 4·8 mm.

Locality of type, St. Vincent Gulf, 22 fathoms with 6 other examples, 100 fathoms off Beachport, one broken, 110 fathoms 6, 130 fathoms off Cape Jaffa, 2 broken.

Ornament.—The type is white, but a co-type shows a brown tinting of the two carinæ and of that part of the axial costæ connecting them, most marked at the tubercles of junction. This shell is 10·1 mm. long, and shows fifteen spiral liræ at the base.

Observations.—The living mollusc has not been taken, so the radula and the operculum (if any) are not known. Its generic position is very doubtful, and even its family is questionable. Some conchologists who have seen it refer it with doubt to the *Terebridae*, and propose the creation of a new genus for its reception. Its infra-sutural sulcus, barely thickened at the margin, suggests *Pleurotomidae*, but it is difficult to find a genus for it here.

EXPLANATION OF PLATE IV.

- Fig. 1, 2, Operculum of *Scala morchi*, Angas.
 „ 3, 4, 5, ? *Terebra dyscritos*.
 „ 6, *Scala platypleura*, n. sp., Verco.
 „ 7, „ *valida*, n. sp., Verco.
 „ 8, „ *acanthopleura*, n. sp., Verco.
 „ 9, 10, „ *invalida*, n. sp., Verco.
 „ 11, *Cingulina diaphana*, n. sp., Verco.